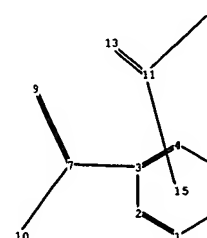
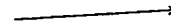
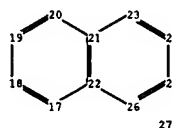
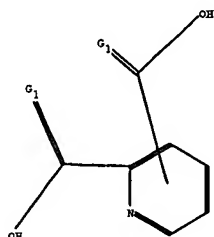
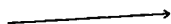
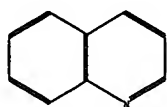


chain nodes :
 7 9 10 11 12 13
 ring nodes :
 1 2 3 4 5 6
 chain bonds :
 3-7 7-9 7-10 11-12 11-13
 ring bonds :
 1-2 1-6 2-3 3-4 4-5 5-6
 exact/norm bonds :
 7-9 7-10 11-12 11-13
 exact bonds :
 3-7
 normalized bonds :
 1-2 1-6 2-3 3-4 4-5 5-6
 isolated ring systems :
 containing 1 :

G1:O,S

Match level :
 1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:CLASS 9:CLASS 10:CLASS 11:CLASS
 12:CLASS 13:CLASS 15:CLASS



chain nodes :

7 9 10 11 12 13 27

ring nodes :

1 2 3 4 5 6 17 18 19 20 21 22 23 24 25 26

chain bonds :

3-7 7-9 7-10 11-12 11-13 27-27 27-27

ring bonds :

1-2 1-6 2-3 3-4 4-5 5-6 17-18 17-22 18-19 19-20 20-21 21-22 21-23 22-26
23-24 24-25 25-26

exact/norm bonds :

7-9 7-10 11-12 11-13

exact bonds :

3-7 27-27 27-27

normalized bonds :

1-2 1-6 2-3 3-4 4-5 5-6 17-18 17-22 18-19 19-20 20-21 21-22 21-23 22-26
23-24 24-25 25-26

isolated ring systems :

containing 1 :

G1:O,S

Match level :

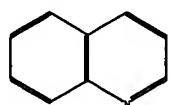
1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:CLASS 9:CLASS 10:CLASS 11:CLASS
12:CLASS 13:CLASS 15:CLASS 17:Atom 18:Atom 19:Atom 20:Atom 21:Atom 22:Atom
23:Atom 24:Atom 25:Atom 26:Atom 27:CLASS

fragments assigned reactant role:

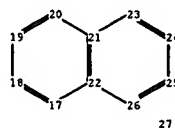
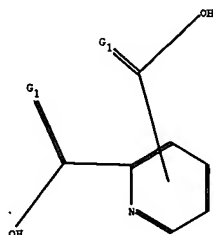
containing 17

fragments assigned product role:

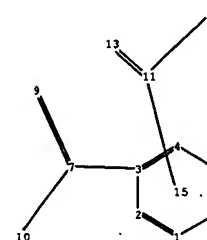
containing 1



Cu



30



chain nodes :

7 9 10 11 12 13 27 30

ring nodes :

1 2 3 4 5 6 17 18 19 20 21 22 23 24 25 26

chain bonds :

3-7 7-9 7-10 11-12 11-13, 27-27 27-27

ring bonds :

1-2 1-6 2-3 3-4 4-5 5-6 17-18 17-22 18-19 19-20 20-21 21-22 21-23 22-26

23-24 24-25 25-26

exact/norm bonds :

7-9 7-10 11-12 11-13

exact bonds :

3-7 27-27 27-27

normalized bonds :

1-2 1-6 2-3 3-4 4-5 5-6 17-18 17-22 18-19 19-20 20-21 21-22 21-23 22-26

23-24 24-25 25-26

isolated ring systems :

containing 1 :

G1:O,S

Match level :

1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:CLASS 9:CLASS 10:CLASS 11:CLASS

12:CLASS 13:CLASS 15:CLASS 17:Atom 18:Atom 19:Atom 20:Atom 21:Atom 22:Atom

23:Atom 24:Atom 25:Atom 26:Atom 27:CLASS 30:CLASS

fragments assigned reactant role:

containing 17

fragments assigned product role:

containing 1

fragments assigned reactant/reagent role:

containing 30

* * * * * Welcome to STN International * * * * *

NEWS 1 Web Page URLs for STN Seminar Schedule - N. America
NEWS 2 "Ask CAS" for self-help around the clock
NEWS 3 May 12 EXTEND option available in structure searching
NEWS 4 May 12 Polymer links for the POLYLINK command completed in REGISTRY
NEWS 5 May 27 New UPM (Update Code Maximum) field for more efficient patent SDIs in Cplus
NEWS 6 May 27 Cplus super roles and document types searchable in REGISTRY
NEWS 7 Jun 22 STN Patent Forums to be held July 19-22, 2004
NEWS 8 Jun 28 Additional enzyme-catalyzed reactions added to CASREACT
NEWS 9 Jun 28 ANTE, AQUALINE, BIOENG, CIVILENG, ENVIROENG, MECHENG, and WATER from CSA now available on STN(R)
NEWS 10 Jul 12 BEILSTEIN enhanced with new display and select options, resulting in a closer connection to BABS

NEWS EXPRESS MARCH 31 CURRENT WINDOWS VERSION IS V7.00A, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 26 APRIL 2004

NEWS HOURS STN Operating Hours Plus Help Desk Availability
NEWS INTER General Internet Information
NEWS LOGIN Welcome Banner and News Items
NEWS PHONE Direct Dial and Telecommunication Network Access to STN
NEWS WWW CAS World Wide Web Site (general information)

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* * * * * STN Columbus * * * * *

FILE 'HOME' ENTERED AT 04:07:05 ON 22 JUL 2004

=> file reg

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	0.21	0.21

FILE 'REGISTRY' ENTERED AT 04:07:38 ON 22 JUL 2004

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STRUCTURE FILE UPDATES: 20 JUL 2004 HIGHEST RN 713489-00-0

DICTIONARY FILE UPDATES: 20 JUL 2004 HIGHEST RN 713489-00-0

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2004

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Experimental and calculated property data are now available. For more information enter HELP PROP at an arrow prompt in the file or refer to the file summary sheet on the web at:
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=>

L1 STRUCTURE UPLOADED

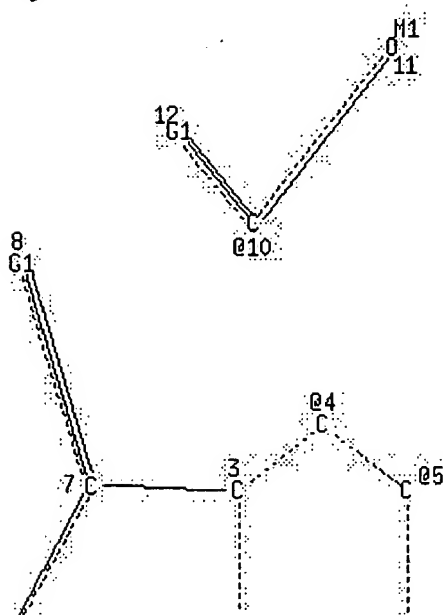
=> d 11

L1 HAS NO ANSWERS

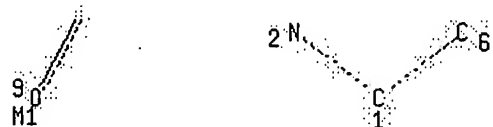
L1 STR

0:13:5 14

Page 1-A



Page 1-B



Page 2-B

VAR G1=13/14

VPA 10-4/5 S

NODE ATTRIBUTES:

HCOUNT	IS	M1	AT	9
HCOUNT	IS	M1	AT	11
NSPEC	IS	R	AT	1
NSPEC	IS	R	AT	2
NSPEC	IS	R	AT	3
NSPEC	IS	R	AT	4
NSPEC	IS	R	AT	5
NSPEC	IS	R	AT	6
NSPEC	IS	C	AT	7
NSPEC	IS	C	AT	8
NSPEC	IS	C	AT	9
NSPEC	IS	C	AT	10
NSPEC	IS	C	AT	11
NSPEC	IS	C	AT	12

DEFAULT MLEVEL IS ATOM

MLEVEL IS CLASS AT 7 9 10 11 13 14
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RSPEC I

NUMBER OF NODES IS 14

STEREO ATTRIBUTES: NONE

=> s l1

SAMPLE SEARCH INITIATED 04:09:41 FILE 'REGISTRY'

SAMPLE SCREEN SEARCH COMPLETED - 2471 TO ITERATE

40.5% PROCESSED 1000 ITERATIONS
 INCOMPLETE SEARCH (SYSTEM LIMIT EXCEEDED)
 SEARCH TIME: 00.00.01

4 ANSWERS

FULL FILE PROJECTIONS: ONLINE **COMPLETE**
 BATCH **COMPLETE**

PROJECTED ITERATIONS: 46439 TO 52401

PROJECTED ANSWERS: 9 TO 385

L2 4 SEA SSS SAM L1

=> s l1 full

THE ESTIMATED SEARCH COST FOR FILE 'REGISTRY' IS 155.00 U.S. DOLLARS

DO YOU WANT TO CONTINUE WITH THIS REQUEST? (Y)/N or END:y

FULL SEARCH INITIATED 04:09:46 FILE 'REGISTRY'

FULL SCREEN SEARCH COMPLETED - 48368 TO ITERATE

100.0% PROCESSED 48368 ITERATIONS
 SEARCH TIME: 00.00.01

289 ANSWERS

L3 289 SEA SSS FUL L1

=> file hcaplus

COST IN U.S. DOLLARS

SINCE FILE	TOTAL
ENTRY	SESSION
156.68	156.89

FULL ESTIMATED COST

FILE 'HCAPLUS' ENTERED AT 04:09:51 ON 22 JUL 2004

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FILE COVERS 1907 - 22 Jul 2004 VOL 141 ISS 4
 FILE LAST UPDATED: 21 Jul 2004 (20040721/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

```
=> s 13/thu
      2190 L3
      607517 THU/RL
L4      34 L3/THU
      (L3 (L) THU/RL)
```

```
=> file reg
COST IN U.S. DOLLARS          SINCE FILE      TOTAL
                               ENTRY      SESSION
FULL ESTIMATED COST          2.48      159.37
```

FILE 'REGISTRY' ENTERED AT 04:09:57 ON 22 JUL 2004
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 DICTIONARY FILE UPDATES: 20 JUL 2004 HIGHEST RN 713489-00-0

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2004

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Experimental and calculated property data are now available. For more information enter HELP PROP at an arrow prompt in the file or refer to the file summary sheet on the web at:
<http://www.cas.org/ONLINE/DBSS/registryss.html>

```
=> e quinoline/cn
E1      1      QUINOLINAZO F/CN
E2      1      QUINOLINAZO R/CN
E3      1 --> QUINOLINE/CN
E4      1      QUINOLINE 2-OXIDOREDUCTASE/CN
E5      1      QUINOLINE 2-OXIDOREDUCTASE (PSEUDOMONAS PUTIDA CLONE 13/42 G
      ENE QORL SUBUNIT REDUCED)/CN
E6      1      QUINOLINE 2-OXIDOREDUCTASE (PSEUDOMONAS PUTIDA CLONE 13/42 G
      ENE QORM SUBUNIT REDUCED)/CN
E7      1      QUINOLINE 2-OXIDOREDUCTASE (PSEUDOMONAS PUTIDA CLONE 13/42 G
      ENE QORS SUBUNIT REDUCED)/CN
E8      1      QUINOLINE 2-OXIDOREDUCTASE (SULFOLOBUS TOKODAII STRAIN 7 GEN
      E ST1013)/CN
E9      1      QUINOLINE 2-OXIDOREDUCTASE (SULFOLOBUS TOKODAII STRAIN 7 GEN
      E ST1571)/CN
E10     1      QUINOLINE 2-OXIDOREDUCTASE (TREPONEMA PALLIDUM GENE TP0080)/
      CN
E11     1      QUINOLINE 4,7-BISTHIOCARBONAMIDE/CN
E12     1      QUINOLINE 6-CHLORO-4-METHYL-, 1-OXIDE/CN
```

```
=> s e3
L5      1 QUINOLINE/CN
```

=> file hcaplus
 COST IN U.S. DOLLARS
 FULL ESTIMATED COST

SINCE FILE	TOTAL
ENTRY	SESSION
6.11	165.48

FILE 'HCAPLUS' ENTERED AT 04:12:10 ON 22 JUL 2004
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FILE COVERS 1907 - 22 Jul 2004 VOL 141 ISS 4
 FILE LAST UPDATED: 21 Jul 2004 (20040721/ED)

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=> s 15/rct
 10806 L5
 2641509 RCT/RL
 L6 1747 L5/RCT
 (L5 (L) RCT/RL)

=> d his

(FILE 'HOME' ENTERED AT 04:07:05 ON 22 JUL 2004)

FILE 'REGISTRY' ENTERED AT 04:07:38 ON 22 JUL 2004
 L1 STRUCTURE UPLOADED

L2 4 S L1
 L3 289 S L1 FULL

FILE 'HCAPLUS' ENTERED AT 04:09:51 ON 22 JUL 2004
 L4 34 S L3/THU

FILE 'REGISTRY' ENTERED AT 04:09:57 ON 22 JUL 2004
 E QUINOLINE/CN
 L5 1 S E3

FILE 'HCAPLUS' ENTERED AT 04:12:10 ON 22 JUL 2004
 L6 1747 S L5/RCT

=> s 15 and 14
 L7 0 L6 AND L4

=> file reg
 COST IN U.S. DOLLARS

SINCE FILE	TOTAL
ENTRY	SESSION

h eb c g cg b cg

eb

FULL ESTIMATED COST

2.48

167.96

FILE 'REGISTRY' ENTERED AT 04:12:34 ON 22 JUL 2004
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 DICTIONARY FILE UPDATES: 20 JUL 2004 HIGHEST RN 713489-00-0

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2004

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Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
 information enter HELP PROP at an arrow prompt in the file or refer
 to the file summary sheet on the web at:
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> e 8-hydroxyquinoline/cn

E1	1	8-HYDROXYQUINOLIN-5-SULFONYL CHLORIDE/CN
E2	1	8-HYDROXYQUINOLINATE/CN
E3	1 -->	8-HYDROXYQUINOLINE/CN
E4	1	8-HYDROXYQUINOLINE .ALPHA.-RESORCYLATE/CN
E5	1	8-HYDROXYQUINOLINE .BETA.-D-GLUCOSIDE/CN
E6	1	8-HYDROXYQUINOLINE 1-OXIDE/CN
E7	1	8-HYDROXYQUINOLINE ALUMINUM/CN
E8	1	8-HYDROXYQUINOLINE ALUMINUM SULFATE/CN
E9	1	8-HYDROXYQUINOLINE BENZOATE/CN
E10	1	8-HYDROXYQUINOLINE BENZOATE (SALT)/CN
E11	1	8-HYDROXYQUINOLINE BITARTRATE/CN
E12	1	8-HYDROXYQUINOLINE CALCIUM SALT/CN

=> s e3

L8 1 8-HYDROXYQUINOLINE/CN

=> file hcaplus

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	4.85	172.81

FILE 'HCAPLUS' ENTERED AT 04:12:54 ON 22 JUL 2004
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FILE COVERS 1907 - 22 Jul 2004 VOL 141 ISS 4
FILE LAST UPDATED: 21 Jul 2004 (20040721/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s l8/rct

```

      7784 L8
      2641509 RCT/RL
L9      1504 L8/RCT
          (L8 (L) RCT/RL)

```

=> d his

(FILE 'HOME' ENTERED AT 04:07:05 ON 22 JUL 2004)

FILE 'REGISTRY' ENTERED AT 04:07:38 ON 22 JUL 2004

```

L1      STRUCTURE UPLOADED
L2      4 S L1
L3      289 S L1 FULL

```

FILE 'HCAPLUS' ENTERED AT 04:09:51 ON 22 JUL 2004

```

L4      34 S L3/THU

```

FILE 'REGISTRY' ENTERED AT 04:09:57 ON 22 JUL 2004

```

      E QUINOLINE/CN
L5      1 S E3

```

FILE 'HCAPLUS' ENTERED AT 04:12:10 ON 22 JUL 2004

```

L6      1747 S L5/RCT
L7      0 S L6 AND L4

```

FILE 'REGISTRY' ENTERED AT 04:12:34 ON 22 JUL 2004

```

      E 8-HYDROXYQUINOLINE/CN
L8      1 S E3

```

FILE 'HCAPLUS' ENTERED AT 04:12:54 ON 22 JUL 2004

```

L9      1504 S L8/RCT

```

=> s l9 and l4

```

L10     0 L9 AND L4

```

=> file casreact

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

2.48

175.29

FILE 'CASREACT' ENTERED AT 04:13:22 ON 22 JUL 2004

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FILE CONTENT:1840 - 18 Jul 2004 VOL 141 ISS 3

```
*****
*
*   CASREACT now has more than 8 million reactions
*
*****
```

Some CASREACT records are derived from the ZIC/VINITI database (1974-1991) provided by InfoChem, INPI data prior to 1986, and Biotransformations database compiled under the direction of Professor Dr. Klaus Kieslich.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=>

L11 STRUCTURE UPLOADED

=> d l11

L11 HAS NO ANSWERS

L11 STR

=> s l11

SAMPLE SEARCH INITIATED 04:17:59 FILE 'CASREACT'
SCREENING COMPLETE - 178 REACTIONS TO VERIFY FROM 21 DOCUMENTS

100.0% DONE 178 VERIFIED 0 HIT RXNS 0 DOCS
SEARCH TIME: 00.00.01

FULL FILE PROJECTIONS: ONLINE **COMPLETE**
BATCH **COMPLETE**
PROJECTED VERIFICATIONS: 2760 TO 4360
PROJECTED ANSWERS: 0 TO 0

L12 0 SEA SSS SAM L11 (0 REACTIONS)

=> s l11 full

THE ESTIMATED SEARCH COST FOR FILE 'CASREACT' IS 102.30 U.S. DOLLARS
DO YOU WANT TO CONTINUE WITH THIS REQUEST? (Y)/N or END:y
FULL SEARCH INITIATED 04:18:05 FILE 'CASREACT'
SCREENING COMPLETE - 5279 REACTIONS TO VERIFY FROM 650 DOCUMENTS

100.0% DONE 5279 VERIFIED 21 HIT RXNS 8 DOCS
SEARCH TIME: 00.00.01

L13 8 SEA SSS FUL L11 (21 REACTIONS)

=>

L14 STRUCTURE UPLOADED

=> d l14

L14 HAS NO ANSWERS

L14 STR

=> s l14

SAMPLE SEARCH INITIATED 04:20:11 FILE 'CASREACT'
SCREENING COMPLETE - 0 REACTIONS TO VERIFY FROM 0 DOCUMENTS

100.0% DONE 0 VERIFIED 0 HIT RXNS 0 DOCS
SEARCH TIME: 00.00.01

h eb c g cg b cg

eb

FULL FILE PROJECTIONS: ONLINE **COMPLETE**
 BATCH **COMPLETE**
 PROJECTED VERIFICATIONS: 0 TO 0
 PROJECTED ANSWERS: 0 TO 0

L15 0 SEA SSS SAM L14 (0 REACTIONS)

=> s l14 full

THE ESTIMATED SEARCH COST FOR FILE 'CASREACT' IS 102.30 U.S. DOLLARS
 DO YOU WANT TO CONTINUE WITH THIS REQUEST? (Y)/N or END:y
 FULL SEARCH INITIATED 04:20:16 FILE 'CASREACT'
 SCREENING COMPLETE - 74 REACTIONS TO VERIFY FROM 10 DOCUMENTS

100.0% DONE 74 VERIFIED 0 HIT RXNS 0 DOCS
 SEARCH TIME: 00.00.01

L16 0 SEA SSS FUL L14 (0 REACTIONS)

=> d l13, ibib abs crd, i-g

L13 ANSWER 1 OF 8 CASREACT COPYRIGHT 2004 ACS on STN

Full
Text

References

ACCESSION NUMBER: 128:75309 CASREACT
 TITLE: Preparation of (5,6-dicarboxy-3-pyridyl)methylammonium
 halides.
 INVENTOR(S): Wu, Wen Xue
 PATENT ASSIGNEE(S): American Cyanamid Company, USA
 SOURCE: Eur. Pat. Appl., 14 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 812828	A1	19971217	EP 1997-303663	19970529
EP 812828	B1	20020313		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI				
TW 426671	B	20010321	TW 1997-86107147	19970527
AT 214370	E	20020315	AT 1997-303663	19970529
PT 812828	T	20020930	PT 1997-303663	19970529
ES 2174185	T3	20021101	ES 1997-303663	19970529
CZ 288272	B6	20010516	CZ 1997-1706	19970603
CA 2207379	AA	19971210	CA 1997-2207379	19970606
AU 9724758	A1	19971218	AU 1997-24758	19970606
AU 709900	B2	19990909		
JP 10059941	A2	19980303	JP 1997-164984	19970606
IL 121032	A1	20010128	IL 1997-121032	19970608
BR 9703506	A	19981006	BR 1997-3506	19970609
ZA 9705075	A	19981209	ZA 1997-5075	19970609
IN 183352	A	19991127	IN 1997-CA1085	19970609
RU 2142943	C1	19991220	RU 1997-109816	19970609
HU 218875	B	20001228	HU 1997-1022	19970609
CN 1172802	A	19980211	CN 1997-113612	19970610
CN 1100758	B	20030205		
US 6002012	A	19991214	US 1998-45203	19980320

PRIORITY APPLN. INFO.:

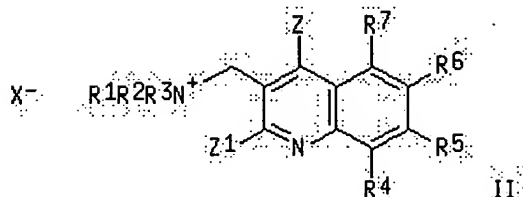
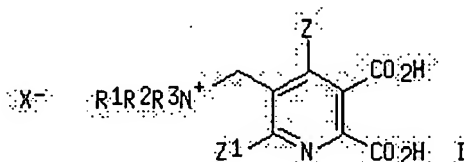
US 1996-661206

19960610

OTHER SOURCE(S):

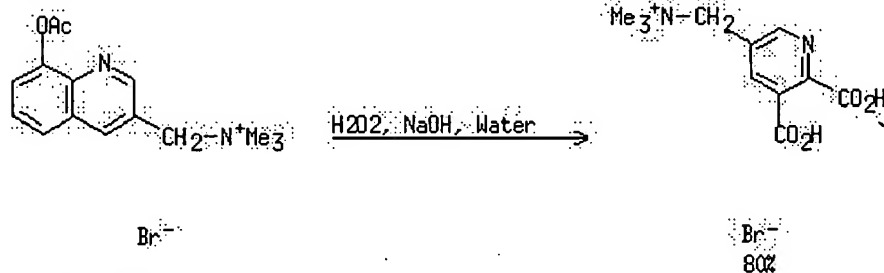
MARPAT 128:75309

GI



AB Title compds. [I; R-R2 = alkyl; RR1 = (O-, S-, or NR3-interrupted) 5-6 membered ring; R3 = alkyl; X = Br, Cl, iodo; Z = H, halo; Z1 = H, halo, cyano, NO2], were prepd. by oxidn. of quinolylmethylammonium halides (II; R4-R7 = H, OH, NO2, acyloxy, amino, NO2, alkoxy, SO3H, SH, SO2Cl; 1 of R4-R7 ≠ H, halo; other variables as above) with H2O2 in aq. base. Thus, (8-acetoxy-3-quinolylmethyl)trimethylammonium bromide in aq. NaOH at 85-90° was treated with H2O2 to give 80% (5,6-dicarboxy-3-pyridylmethyl)trimethylammonium bromide.

RX(1) OF 1



NOTE: 85-90 degree.

L13 ANSWER 2 OF 8 CASREACT COPYRIGHT 2004 ACS on STN

Full Text	Cited References
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ACCESSION NUMBER:

123:111860 CASREACT

TITLE:

Improved method for the preparation of pyridine-2,3-dicarboxylic acids.

INVENTOR(S):

Miller, Paul Edward

PATENT ASSIGNEE(S):

American Cyanamid Co., USA

SOURCE:

Eur. Pat. Appl., 8 pp.

CODEN: EPXXDW

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.

KIND DATE

APPLICATION NO. DATE

h

eb c

g cg b

cg

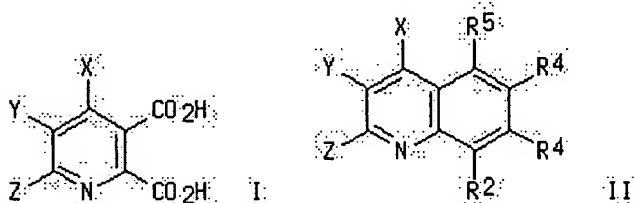
eb

EP 661268	A1	19950705	EP 1994-117749	19941110
EP 661268	B1	19980422		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE				
AT 165347	E	19980515	AT 1994-117749	19941110
ES 2115846	T3	19980701	ES 1994-117749	19941110
TW 416947	B	20010101	TW 1994-83111746	19941215
JP 07242631	A2	19950919	JP 1994-335493	19941222
BR 9405262	A	19951107	BR 1994-5262	19941227
IL 112157	A1	20001206	IL 1994-112157	19941227
US 5614635	A	19970325	US 1995-515843	19950816
			US 1993-174658	19931228

PRIORITY APPLN. INFO.:

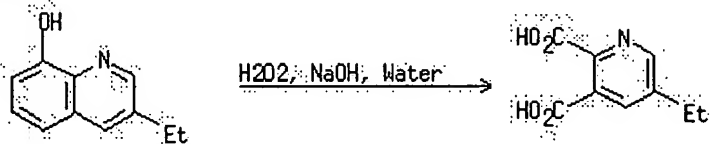
OTHER SOURCE(S): MARPAT 123:111860

GI



AB An improved method is described for the prepn. of pyridine-2,3-dicarboxylic acids I [X = H, Me; Y = H, halo, (un)substituted alkyl, amino, Ph, etc.; Z = H, NO₂, OH, CHO, CO₂H, (un)substituted alkyl, amino, Ph, etc.; or YZ optionally = (CH₂)₃₋₄ when X = H, or (un)substituted CH:CHCH:CH] by continuous oxidn. of substituted quinolines II [R₂-R₅ = H, OH, alkoxy, SO₃H, SO₂Cl, SH, halo, NO₂, NH₂; one group ≠ H] or their oxides or salts. I are useful as herbicide intermediates. The method involves addn. of aq. H₂O₂, aq. base, and II (optionally in aq. mineral acid or base soln.) to a 1st reaction vessel, which is allowed to foam over into a 2nd vessel. This gives an aq. soln. of a I salt in the 2nd vessel, which is then acidified to give I. The 2-vessel method offers improved safety and handling of the reaction, which produces heavy foaming, high heat release, and frequent "hang-fire" conditions. In an example, a stirred aq. soln. resulting from a previous run (contg. 10.7 wt.% of the product di-Na salt) was heated to 100° and fed sep. streams of 35% H₂O₂, 50% aq. NaOH, and molten 95% 3-ethyl-8-hydroxyquinoline. After foaming into a 2nd vessel which was kept at 90-100°, anal. of the entire system showed 89% total yield of 5-ethylpyridine-2,3-dicarboxylic acid, which was isolated from the foamed-over di-Na salt soln. by acidification with H₂SO₄.

RX(1) OF 1



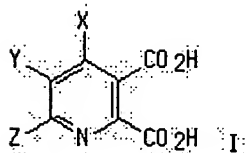
NOTE: 100 degree., product di-Na salt present; highly exothermic, heavy foaming, hang-fire conditions; improved safety by allowing foaming into 2nd vessel

Full Text	CRIND References
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ACCESSION NUMBER: 121:35349 CASREACT
 TITLE: Method for the preparation of 2,3-pyridinedicarboxylic acids and derivatives
 INVENTOR(S): Cortese, Nicholas Angelo; Strong, Henry Lee
 PATENT ASSIGNEE(S): American Cyanamid Co., USA
 SOURCE: Eur. Pat. Appl., 9 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

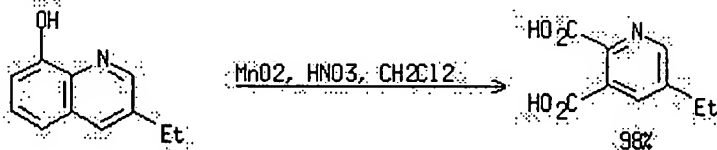
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 594993	A1	19940504	EP 1993-114564	19930910
EP 594993	B1	19970528		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE				
US 5371229	A	19941206	US 1992-967350	19921028
AT 153659	E	19970615	AT 1993-114564	19930910
ES 2101913	T3	19970716	ES 1993-114564	19930910
IL 107406	A1	19980104	IL 1993-107406	19931026
BR 9304382	A	19940607	BR 1993-4382	19931027
JP 06211794	A2	19940802	JP 1993-289868	19931027
JP 3315220	B2	20020819		

PRIORITY APPLN. INFO.: US 1992-967350 19921028
 OTHER SOURCE(S): MARPAT 121:35349
 GI



AB Title compds. I (X = H, Me, with the proviso that when YZ forms a ring, X = H; Y, Z = H, (substituted) C1-6 alkyl, (substituted) amino, O2N, (substituted) Ph, etc., YZ = ring, (CH2)n, etc., wherein n = 3,4), useful as intermediates in prodn. of 2-(2-imidazolin-2-yl)nicotinate herbicides, are prepd. by an improved process in significantly enhanced yield, by HNO3 oxidn. of the appropriately substituted quinoline in presence of a catalytic amt. of Mn. 3-Ethyl-8-hydroxyquinoline in CH2Cl2 was added to 70% HNO3 contg. MnO2 to give I (X = Z = H, Y = Et) in 98.52 % yield.

RX(1) OF 1



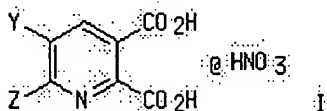
L13 ANSWER 4 OF 8 CASREACT COPYRIGHT 2004 ACS on STN

Full Text	CRIND References
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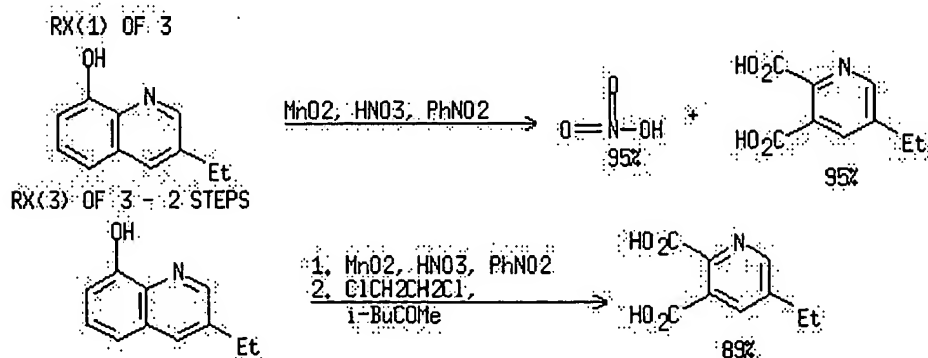
ACCESSION NUMBER: 120:217305 CASREACT
 TITLE: Preparation of substituted-2,3-dicarboxypyridinium

INVENTOR(S): nitrate
 Strong, Henry L.
 PATENT ASSIGNEE(S): American Cyanamid Co., USA
 SOURCE: U.S., 4 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5284955	A	19940208	US 1992-967349	19921028
EP 601288	A2	19940615	EP 1993-114565	19930910
EP 601288	A3	19940622		
EP 601288	B1	20030502		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE				
AT 238991	E	20030515	AT 1993-114565	19930910
IL 107405	A1	19980104	IL 1993-107405	19931026
BR 9304381	A	19940607	BR 1993-4381	19931027
JP 06234743	A2	19940823	JP 1993-289866	19931027
JP 3315219	B2	20020819		
US 5410062	A	19950425	US 1994-190825	19940202
PRIORITY APPLN. INFO.:			US 1992-967349	19921028
OTHER SOURCE(S):		MARPAT 120:217305		
GI				



AB Title compds. I (Y, Z = H, (substituted) C1-6 alkyl, (substituted) Ph, one of Y, Z ≠ H) useful in isolation and purifn. of 2,3-pyridinedicarboxylic acid herbicide intermediates, are prepd. with an improved yield and purity. HNO₃ and MnO₂ are heated to 95° and treated with 3-ethyl-8-hydroxyquinoline in nitrobenzene over 2 h, held at 90-100° for 10 h and cooled to room temp. to give I (Y = Et, Z = H). This in CH₂Cl₂ and MIBK, were refluxed for 1 h and cooled to room temp. to give 5-ethyl-2,3-pyridinedicarboxylic acid.

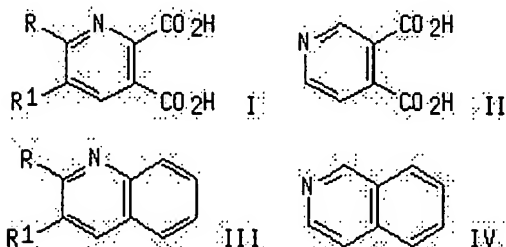


Full Text Citations
References

ACCESSION NUMBER: 115:158979 CASREACT
 TITLE: Preparation of pyridinecarboxylic acids
 INVENTOR(S): Hara, Takao
 PATENT ASSIGNEE(S): Yamamoto Kasei K. K., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

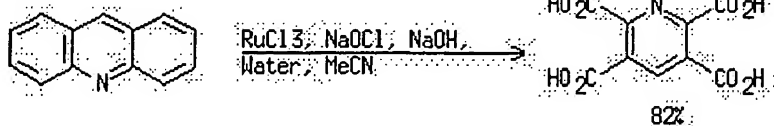
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 03101661	A2	19910426	JP 1989-238188	19890913
JP 2516435	B2	19960724		

PRIORITY APPLN. INFO.: JP 1989-238188 19890913
 OTHER SOURCE(S): MARPAT 115:158979
 GI



AB Title compds. I (R, R1 = H, alkyl; RR1 = CH:CHCH:CH) and II were prepd. by oxidn. of quinolines III or isoquinoline IV with ruthenium tetroxide in MeCN. Thus, stirring quinoline with RuCl3, NaClO, and aq. NaOH in MeCN at 30° for 50 min gave 73.3% quinolinic acid.

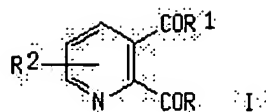
RX(2) OF 3



L13 ANSWER 6 OF 8 CASREACT COPYRIGHT 2004 ACS on STN

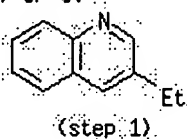
Full Text Citations
References

ACCESSION NUMBER: 112:198071 CASREACT
 TITLE: Ozonolysis of quinolines: a versatile synthesis of polyfunctional pyridines
 AUTHOR(S): O'Murchu, C.
 CORPORATE SOURCE: Forschungsabt. Org. Chem., Lonza A.-G., Visp, CH-3930, Switz.
 SOURCE: Synthesis (1989), (11), 880-82
 CODEN: SYNTBF; ISSN: 0039-7881
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 GI

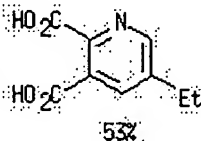


AB A simple, safe and efficient procedure, easily adapted to a large scale, is described for the synthesis of substituted quinolones which are readily oxidized by ozone in the presence of mineral acid, followed by an oxidative work up with hydrogen peroxide to afford substituted 2,3-pyridinedicarboxylic acids I ($R = R_1 = OH$, $R_2 = H$, 4-, 5-, 6-Me, 5-Et) and acyl pyridines I ($R = Me$, $R_1 = Me$, OH , $R_2 = H$).

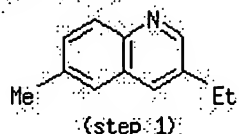
RX(8) OF 30



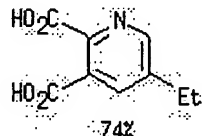
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Water
2. H₂O₂, Water



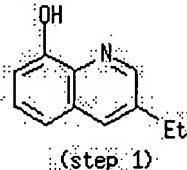
RX(9) OF 30



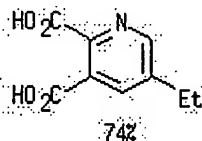
1. Ozone, AcOH, H₂SO₄,
Water
2. H₂O₂, Water



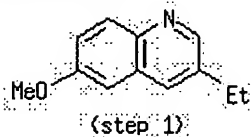
RX(10) OF 30



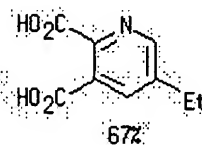
1. Ozone, AcOH, H₂SO₄,
Water
2. H₂O₂, Water



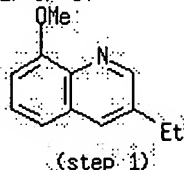
RX(11) OF 30



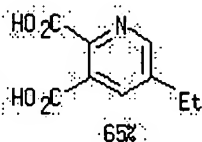
1. Ozone, AcOH, H₂SO₄,
Water
2. H₂O₂, Water



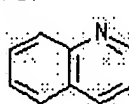
RX(12) OF 30



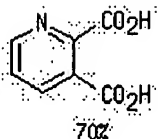
1. Ozone, AcOH, H₂SO₄,
Water
2. H₂O₂, Water



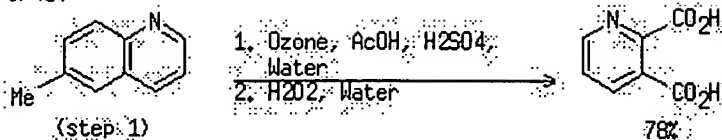
RX(15) OF 30



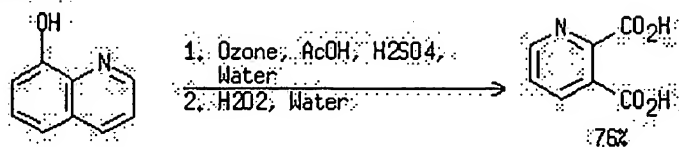
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Water
2. H₂O₂, Water



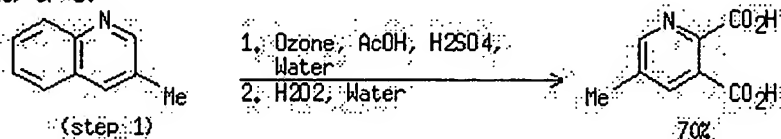
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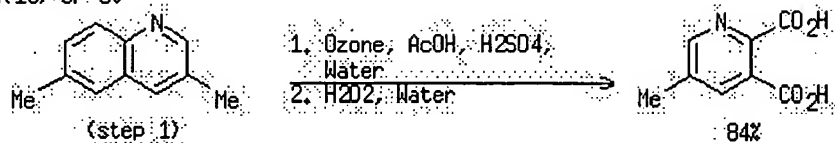
RX(17) OF 30



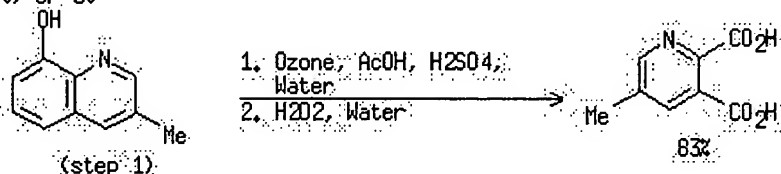
RX(18) OF 30



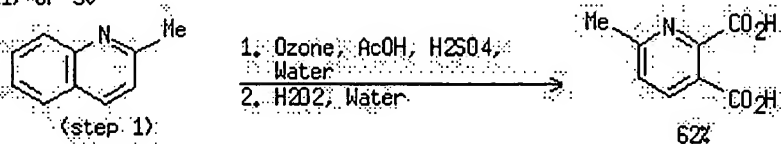
RX(19) OF 30



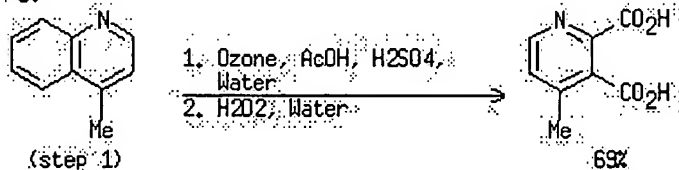
RX(20) OF 30



RX(21) OF 30



RX(22) OF 30



L13 ANSWER 7 OF 8 CASREACT COPYRIGHT 2004 ACS on STN

Full Text	Citing References
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ACCESSION NUMBER:

109:54676 CASREACT

TITLE:

Preparation of pyridine-2,3-dicarboxylates as
intermediates for herbicides

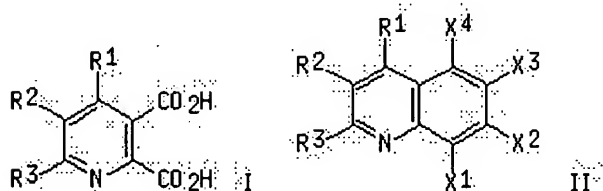
INVENTOR(S):

Rieker, William Frederick; Daniels, William Alan

PATENT ASSIGNEE(S): American Cyanamid Co., USA
 SOURCE: Eur. Pat. Appl., 9 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 259687	A2	19880316	EP 1987-112278	19870825
EP 259687	A3	19890531		
EP 259687	B1	19910703		
R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE				
US 4816588	A	19890328	US 1987-85916	19870819
AT 64923	E	19910715	AT 1987-112278	19870825
ES 2028834	T3	19920716	ES 1987-112278	19870825
IN 168450	A	19910406	IN 1987-CA697	19870902
IL 83795	A1	19920621	IL 1987-83795	19870906
CS 270573	B2	19900712	CS 1987-6529	19870909
HU 48211	A2	19890529	HU 1987-4031	19870910
HU 203535	B	19910828		
CA 1297112	A1	19920310	CA 1987-546560	19870910
DK 8704753	A	19880313	DK 1987-4753	19870911
DK 169518	B1	19941121		
AU 8778282	A1	19880317	AU 1987-78282	19870911
AU 599698	B2	19900726		
ZA 8706838	A	19880427	ZA 1987-6838	19870911
BR 8704717	A	19880503	BR 1987-4717	19870911
JP 63119466	A2	19880524	JP 1987-226733	19870911
JP 07116153	B4	19951213		
DD 262227	A5	19881123	DD 1987-306903	19870911
SU 1690543	A3	19911107	SU 1987-4203342	19870911
PRIORITY APPLN. INFO.:			US 1986-906713	19860912
			EP 1987-112278	19870825

OTHER SOURCE(S): MARPAT 109:54676
 GI



AB The title compds. I [R1 - R3 = H, (hydroxy)alkyl, alkoxy, phenoxy, haloalkyl, NO₂, OH, etc.; R2R3 = atoms to form a ring which may be optionally substituted, in which YZ (sic) are represented by (CH₂)₂Q, (CH)₂Q, wherein Q = O, S, N, with the proviso that R1 = H], useful as intermediates for herbicides, were prepd. from quinoline II (R1 - R3 = as given above; X1 - X4 = OH, H, SO₃H, SO₂Cl, etc.; 1 of X1 - X4 is other than H). To a stirred mixt. of KOH and 3-ethyl-8-hydroxyquinoline (prepn. given) at 90° was added 30% H₂O₂ over 3.25 h. The mixt. was then heated at 90° for a further 1-2 h to give 5-ethylpyridine-2,3-dicarboxylic acid.

RX(2) OF 5



L13 ANSWER 8 OF 8 CASREACT COPYRIGHT 2004 ACS on STN

Full Text	Citing References
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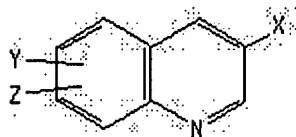
ACCESSION NUMBER: 108:150326 CASREACT
 TITLE: Process for the preparation of 5-alkylquinolinic acids.
 INVENTOR(S): Pastorek, Emmerich; Orth, Winfried; Jeromin, Guenter; Fickert, Werner
 PATENT ASSIGNEE(S): Ruetgerswerke A.-G., Fed. Rep. Ger.
 SOURCE: Ger. Offen., 5 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3614756	A1	19871105	DE 1986-3614756	19860430
EP 247277	A2	19871202	EP 1987-101485	19870204
EP 247277	A3	19880210		
EP 247277	B1	19910911		
R: BE, CH, DE, FR, GB, IT, LI, NL				
JP 62277360	A2	19871202	JP 1987-103442	19870428
JP 06025114	B4	19940406		

PRIORITY APPLN. INFO.:

DE 1986-3614756 19860430

GI



II

AB A procedure for prepg. 5-alkylquinolinic acids (I) was characterized in that 3-alkylquinolines II [X = C1-6 alkyl; Y = H, optional group; Z = OR, NRR1, halo, NHNRR1, CO2H, NHCOR; R,R1 = H, (un)substituted C1-8 alkyl, aralkyl, cycloalkyl] are oxidized in acidic, aq. medium with ClO₃⁻ in the presence of vanadyl (V) cations as catalyst. I are intermediates for plant protective agents. A mixt. of HCl, AcOH, 2-H₂NC₆H₄OMe, and 2-O₂NC₆H₄OMe was heated to reflux and treated with 2-ethylacrolein to give 78.2% 3-ethyl-8-methoxyquinoline which, in aq. HCl, was treated with ammonium vanadate, then aq. NaClO₃. The NaClO₃ was decompd. with NaHSO₃ and the reaction mixt. worked up and treated with CuSO₄ to ppt. the Cu salt of 5-ethylquinolinic acid (III). Reaction of III with aq. NaOH gave the free acid IV. Treating 3-ethyl-8-methoxyquinoline with fuming HNO₃ gave no IV, but rather 3-ethyl-8-methoxynitroquinoline.

RX(1) OF 2



=> log y

COST IN U.S. DOLLARS

FULL ESTIMATED COST

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

CA SUBSCRIBER PRICE

SINCE FILE

ENTRY

254.48

SINCE FILE

ENTRY

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TOTAL

SESSION

429.77

TOTAL

SESSION

-5.28

STN INTERNATIONAL LOGOFF AT 04:23:54 ON 22 JUL 2004

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